



## UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Adress: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/525,424	09/07/2005	Dirk Muhlhoff	3081.110WOU'S	5768
24113	7590	07/16/2010	EXAMINER	
PATTERSON THUENTE CHRISTENSEN PEDERSEN, P.A.			CRANDALL, LYNSEY P	
4800 IDS CENTER			ART UNIT	PAPER NUMBER
80 SOUTH 8TH STREET				3769
MINNEAPOLIS, MN 55402-2100				
			MAIL DATE	DELIVERY MODE
			07/16/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/525,424	<b>Applicant(s)</b> MUHLHOFF ET AL.
	<b>Examiner</b> LYNSEY CRANDALL	<b>Art Unit</b> 3769

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 04 May 2010.  
 2a) This action is FINAL.      2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-32,35-37 and 40-43 is/are pending in the application.  
 4a) Of the above claim(s) 1-31 is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 32,35-37 and 40-43 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 04 May 2010 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_
- 4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date \_\_\_\_\_  
 5) Notice of Informal Patent Application  
 6) Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments with respect to claims 32, 35-37 and 40-43 have been considered but are moot in view of the new ground(s) of rejection.
2. With regards to applicant's arguments that Freedman does not disclose three dimensional scanning by changing the position of the focal point within the tissue in three dimensions, these arguments are not found persuasive. Applicant states that the scanning accomplished by Freedman is limited to the X-Y plane. This is simply not true. First of all, Freedman specifically states "the method and device of FIG. 3 utilize precise ***three-dimensional imaging*** capability of low coherence interferometry to detect cornea tissue to permit determination of the exact location and extent of a plurality of incisions necessary to correct cornea curvature. The ***three-dimensional imaging*** capability also permits precise control of ablating laser in forming the incisions at the location and extent previously determined" (Col 6, lines 5-12). Furthermore, the beam is moved incrementally through an **X-Y** plane and focused at different **depths** (Z plane) within the tissue to construct a cross-sectional image of the entire mass of target tissue (Col 3, lines 22-40 and Col 7, lines 15-51). Freedman discloses in numerous locations throughout the disclosure that three dimensional imaging/information of the tissue is provided. Therefore these arguments are not persuasive.
3. Applicant argues that Freedman does not teach filtering out points of measurement to determine position of boundaries. The examiner respectfully disagrees. Freedman discloses determining the boundary state of the cornea (Col 4,

lines 33-35). Furthermore, Freedman teaches that in order to establish a real-time ablating plan light reflected (**back-scattered**) from the cornea (40 and 42, Fig. 2) is detected by photodetector (46, Fig. 1). Signals from the photodetector are compared to a standard signal of improved acuity. From this comparison, the processor constructs a real-time plan for ablating incisions into the target cornea (Col 5, lines 10-67). Since the entire target area of cornea is measured by detection of back-scattered radiation and only specific points for ablation are determined, these ablating incisions are a **filtered-out sub-group** of all the measurement points. Therefore applicant's arguments that Freedman does not disclose filtering out points of measurement to determine position of boundaries in the tissue are not considered persuasive.

#### ***Claim Objections***

4. Claim 31 is objected to because of the following informalities: Claim 31 is currently listed as (original), but has been withdrawn as stated by applicant in the remarks submitted 5/4/2010 located on the top of page 14. Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 32, 35-37, 40-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. 6,454,761 to Freedman and further in view of U.S. 6,613,041 to Schründer.

8. Freedman discloses a device and method for measuring a transparent or semi-transparent tissue. This invention utilizes precise three-dimensional imaging capability of low coherence interferometry to detect cornea tissue to permit determination of the exact location and extent of a plurality of incisions necessary to correct cornea curvature. The three-dimensional imaging capability also permits precise control of ablating laser in forming the incisions at the location and extent previously determined (Col 6, lines 5-12). Freedman discloses a device comprising: a source of laser radiation (laser diode 68, Fig. 3), a focusing unit (lenses 86 and 88, Fig. 3), a detector unit (photodetector 98, Fig. 3) and a control unit (processor 48, Fig. 3). The processor can construct a virtual or real time display three dimensional image of the

cornea film and construct an ablating plan by comparing the constructed image to a representation of a standard of improved acuity. Processor controls ablating laser in accordance with the ablating plan (Col 5, lines 22-35). Freedman discloses the movement of laser beams incrementally along an axis of the tissue; this is interpreted as a deflection unit or scanner (Col 7, lines 37-50 and Claim 6) that sequentially focuses laser radiation onto a plurality of focal points by the deflecting unit and focusing unit. This invention provides a sequence of detection that can be used to evaluate the thickness and the boundary state of each layer of the cornea or other biological tissue (Col 4, lines 33-35).

9. Freedman is silent with regards to a laser source that emits both illumination radiation and treatment radiation. As seen in Fig. 1, Freedman discloses an illumination source (20, Fig. 1) that is separate from treatment laser (56, Fig. 1). Schründler, on the other hand, discloses a single laser source (1, Fig. 1) with an energy reducing element (intensity attenuator 15, Fig. 1) that is inserted into the beam path when measuring is desired and removed from the beam path when treatment is desired (Col 10, lines 1-10). Schründler discloses that "it is especially preferable if the radiation source for determining the surface form of the biological tissue and that for the operative treatment of the tissue are identical. In this manner, a compact and relatively inexpensive device for determining the tissue topology and the operation of the tissue can be realized" (Col 4, lines 55-60). Therefore it would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to include only one laser source with an energy reducing element as taught by Schründler in the device taught by Freedman in

order to provide a compact, inexpensive laser device that can be used for both measuring and treatment as taught by Schründler.

***Conclusion***

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LYNSEY CRANDALL whose telephone number is (571)270-7035. The examiner can normally be reached on Monday to Thursday 8:00-5:00.

Art Unit: 3769

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hank Johnson can be reached on (571)272-4768. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/LYNSEY CRANDALL/  
Examiner, Art Unit 3769

7/15/2010

/Henry M. Johnson, III/  
Supervisory Patent Examiner, Art  
Unit 3769